

Shelf Rockfishes (Genus *Sebastes*)

Thirty-two fish of the genus *Sebastes* are defined as shelf rockfish in Title 50, Code of Federal Regulations, Parts 600 and 660. They are: bocaccio, bronzespotted, canary, chameleon, chilipepper, cowcod, dwarf-red, flag, freckled, greenblotched/pink, greenspotted, greenstripe, halfbanded, honeycomb, Mexican, pinkrose, pygmy, redstripe, rosethorn, rosy, shortbelly, silvergray, speckled, squarespot, starry, stripetail, swordspine, tiger, vermillion, widow, yelloweye, and yellowtail rockfish.

Status of the Population:

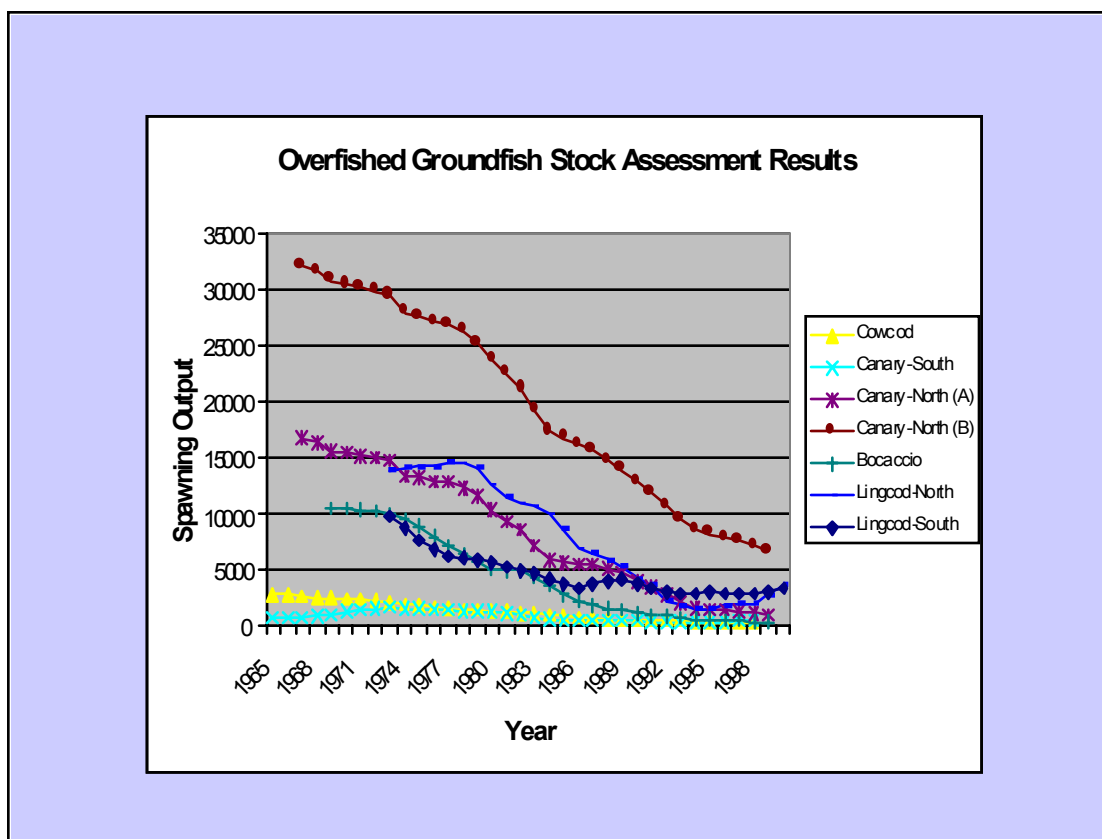
The current status of many rockfishes off the west coast is poor, and significant changes in the groundfish fishery have been necessary to address this situation. There are over 60 different species of rockfish in California. Formal assessments of these fish populations are challenging, due to the number of species and the large commitment of time and effort to conduct the necessary research and analysis. To date, 15 shelf rockfish species have been formally assessed, and the results are not encouraging. Nearly all of these species are currently below optimal abundance levels. Six shelf rockfish species, including four that are important to California anglers and commercial fishermen (bocaccio, canary rockfish, widow rockfish and cowcod), are at such low levels (estimated at or below 25 percent of the unfished population of each species) that they have been declared overfished by the Pacific Fishery Management Council (PFMC). Federal law requires that steps be taken to rebuild overfished stocks under strict guidelines that place an emphasis on a reasonable likelihood of achieving success within specified time periods for each species.

Several factors affect the abundance of rockfishes and the ability to manage them effectively. Recent analyses have shown that rockfish stocks are not as productive as previously thought. This is due in part to improved information about rockfish life history (such as age, growth, and reproduction), better stock assessments and poor environmental conditions that generally have not been favorable to rockfish reproduction or survival since the 1980s. As a result, rockfishes cannot support harvest rates as high as previously thought. Management is further complicated because the habitats and ranges of many rockfish species overlap, so that it is difficult to catch one species without catching other species at the same time. Fishing must be reduced for an entire group of rockfish with similar life histories and habitat preferences in order to realize lower catches that are necessary to rebuild overfished species. For example, although a few shelf rockfish species such as chilipepper and yellowtail appear to be comparatively healthy, their allowable take has been set at levels below the potential yield to protect the weaker species of shelf rockfish that tend to be caught with them, such as bocaccio and canary.

Prior to 2000, the allowable catch of all rockfish in the PFMC's southern management area for rockfish (most of California) was combined into a single quota. To better align fishing opportunities with the resources that support them, fishery managers grouped rockfish into three new categories in 2001: nearshore, shelf, and slope. In addition, management has been refined by setting individual quotas for a few species, which reduces the aggregate quota for other remaining rockfish species.

In order to return depressed rockfish and lingcod stocks to a healthy condition, all fisheries must share in the conservation measures needed for recovery. For the recreational fishery, bag limits have been reduced, gear restrictions imposed, seasons closed, and minimum size limits established. In the commercial fishery, the aggregate rockfish quota for 2001 was reduced by about 57 percent compared to 1997. Rockfish rebuilding plans call for decades of ongoing special efforts to allow the overfished species to recover. Federal rebuilding plans generally call for at least a 50 percent probability of rebuilding within the allotted time. Establishment of an MPA network would increase the probability of successful rebuilding under conditions where all other aspects of rebuilding remain as specified under the proposed plans.

Following is a depiction of trends in abundance for several overfished shelf groundfish species from recent stock assessments:



Current Regulations for Shelf Rockfish:

In order to prevent overfishing and achieve the lower catches necessary to rebuild cowcod, bocaccio, yelloweye, widow, and canary rockfishes, the following west coast Optimum Yields (OYs) were established by the PFMC for shelf rockfish during 2002:

Species/Group	Allowable Catch - MT (OY)	Area
Widow Rockfish	856	Coastwide
Canary Rockfish	93	Coastwide
Chilipepper Rockfish	2000	South of C. Mendocino
Bocaccio	100	South of C. Mendocino
Yellowtail Rockfish	3146	North of C. Mendocino
Cowcod	5	South of C. Mendocino
Yelloweye Rockfish	14	North of Pt. Conception
Other Shelf Rockfish		
North	978	North of C. Mendocino
South	914	South of C. Mendocino

Several new regulations were imposed on the recreational fishery for 2002, and a number of other recent restrictions were continued:

- Four-month season closures are imposed during January-February and November-December for lingcod and rockfish, in waters south of Point Conception.
- Between Point Conception and Cape Mendocino, fishing for shelf rockfish and lingcod is only permitted during January-February and July-August.
- Between Point Conception and Cape Mendocino, fishing for nearshore rockfish is only permitted during January-February and May-October, with incidental allowance (2 fish) of shelf species (excluding bocaccio, cowcod, canary and yelloweye rockfish) during May-June and September-October.
- The overall combined rockfish daily bag limit remains at 10 fish.
- The lingcod minimum size limit is reduced to 24 inches.
- Within the overall rockfish bag limit, only 2 fish may be bocaccio, and 1 may be canary, or yelloweye rockfish.
- A minimum size of 10 inches is continued for bocaccio.
- Retention of cowcod is prohibited.
- No more than one line and 2 hooks may be used when fishing for rockfish and lingcod.

Commercial fishing for shelf rockfish has been greatly restricted in recent years, and targeting by trawl gear has been virtually eliminated. In order to remain within the optimum yields that have been established by the PFMC for 2002, a complex set of bi-monthly cumulative trip limits were established for the various species and species groups of rockfish. In addition to the trip limits, four month closures south of Point Conception (January-February and November-December), and eight month closures between Cape Mendocino and Point Conception (March-June and September-December) were established to prohibit commercial fishing for shelf rockfish during those periods.

Special MPAs known as the Cowcod Conservation Areas (CCAs) were established in the southern California Bight in 2001 to achieve rebuilding yields for cowcod. Bocaccio rebuilding will also benefit from the CCAs. Fishing for shelf and slope groundfish and prawn trawling is prohibited within the closures, because those fishing activities have unavoidable bycatch of cowcod. The closures are expected to reduce cowcod landings by 55 percent, which is necessary to lower overall catches in the area to the rebuilding target of 2.4 mt south of Point Conception. It is anticipated that the closures will remain in effect throughout the cowcod rebuilding period which may take as long as 97 years.

How MPAs May Help:

As demonstrated by the CCAs (above), MPAs may be well-suited for rebuilding overfished shelf rockfish species in certain circumstances. In addition, MPAs have the potential to prevent catastrophic population collapse due to inadvertent overfishing such as has occurred for cowcod, bocaccio, yelloweye, widow, and canary rockfishes, providing a network of MPAs is established before the populations become overfished. Since the threshold for declaring a population as overfished is 25 percent of the unfished abundance, a network of MPAs that protect a significant fraction of the population from fishing pressure (greater than 10 percent of the population and associated habitat) would significantly reduce the risk that the overall population would drop below the overfished threshold. For instance, if 25 percent of an unfished population were protected from fishing inside MPAs, there would be almost no chance that the overall population could be described as overfished using the Federal definition, even under data-poor management conditions. If 25 percent of a stock population is protected, then the overall abundance would be unlikely to drop below 25 percent.

The recent track record shows that even data-rich stocks such as bocaccio and canary rockfish have become overfished, and actively managed and well-studied species such as these would also benefit from the reduced risk of management mistakes provided by an MPA network. This is one of the clearest examples of the

insurance factor provided by MPAs against management uncertainty. Preventing stocks from becoming classified as overfished is an important consideration in weighing the costs and benefits of establishing an MPA network.

Reproductive output from protected portions of spawning populations found within the boundaries of MPAs may be dispersed by currents during the larval life phase, and then recruit to fishing grounds outside the MPAs. This potential enhancement of fisheries may lead to higher catches than would otherwise be allowable. Despite the potential for insurance against management mistakes, it is important to recognize that MPAs would not eliminate the need for active management in fishing grounds that remain open in order to maintain healthy populations and ecosystems throughout the marine environment.